CLAIMS

1. (currently amended) A method for routing signals in a switch of a telecommunications network, comprising the steps of:
(a) receiving an incoming signal at the switch;
(b) slicing data in the received incoming signal into a plurality of sub-signals;
(c) for each sub-signal:
(1) dividing the sub-signal into one or more subsets of data;
(2) applying a checksum function to each subset of data to generate a checkbit for the subset;
(3) adding the checkbit for each subset to the sub-signal to generate an augmented sub-signal;
(4) routing at least two copies of the augmented sub-signal in parallel through redundant portions of a distributed switch fabric of the switch to generate at least two routed sub-signals for the sub-signal, wherein the distributed switch fabric has multiple switch components adapted to route different portions of each of a plurality of incoming signals in parallel;
(5) performing a checksum analysis on at least one of the routed sub-signals; and
(6) selecting one of the routed sub-signals in accordance with the checksum analysis; and
(d) combining data from the selected routed sub-signals corresponding to the plurality of sub-signals to generate [[the]] an outgoing signal.

2. (currently amended) The invention of claim 1, wherein step (a) comprises the step of terminating overhead data in the received incoming signal, wherein the checkbits replace at least some of the terminated overhead data during routing through the distributed switch fabric.

3. (currently amended) The invention of claim 2, wherein the size of each subset of data in each sub-signal is selected such that the addition of the checkbits does not increase the size of the ~~data~~ augmented sub-signal routed through the distributed switch fabric relative to the size of the ~~data in the incoming signal~~ corresponding sub-signal.

4. (original) The invention of claim 3, wherein the incoming signal is in a SONET format and further comprising the step of buffering a sufficient amount of data to ensure errorless protection switching upon detection of a fault during the checksum analysis.

5. (currently amended) The invention of claim 4, wherein the selection of routed sub-signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals for each other sub-signal for the incoming signal.

6. (currently amended) The invention of claim 4, wherein the selection of routed sub-signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all other sub-signals for the incoming signal.

7. (original) The invention of claim 1, wherein the incoming signal is in a SONET format.

8. (currently amended) The invention of claim 1, wherein the selection of routed sub-signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals for each other sub-signal for the incoming signal.

9. (currently amended) The invention of claim 1, wherein the selection of routed sub-signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all other sub-signals for the incoming signal.

10. (original) The invention of claim 1, further comprising the step of buffering a sufficient amount of data to ensure errorless protection switching upon detection of a fault during the checksum analysis.

11. (currently amended) An ~~apparatus~~ switch for routing signals in a telecommunications network, comprising:

(a) means for receiving an incoming signal at the switch;

(b) means for slicing data in the received incoming signal into a plurality of sub-signals;

(c) for each sub-signal:

(1) means dividing the sub-signal into a plurality of subsets of data;

(2) means for applying a checksum function to each subset of data to generate a checkbit for the subset;

(3) means for adding the checkbit for each subset to the sub-signal to generate an augmented sub-signal;

(4) means for routing at least two copies of the augmented sub-signal in parallel through redundant portions of a distributed switch fabric of the switch to generate at least two routed sub-signals for the sub-signal, wherein the distributed switch fabric has multiple switch components adapted to route different portions of each of a plurality of incoming signals in parallel;

(5) means for performing a checksum analysis on at least one of the routed sub-signals; and

(6) means for selecting one of the routed sub-signals in accordance with the checksum analysis; and

(d) means for combining data from the selected routed sub-signals corresponding to the plurality of sub-signals to generate [[the]] an outgoing signal.

12. (currently amended) In a telecommunications network, a switch for routing one or more incoming signals to generate one or more outgoing signals, comprising:

(a) a slicer for each incoming signal, wherein the slicer slices data in the incoming signal into a plurality of sub-signals;

(b) a checkbit generator for each sub-signal, wherein the checkbit generator:

(1) divides the sub-signal into a plurality of subsets of data;

(2) applies a checksum function to each subset of data to generate a checkbit for the subset; and

(3) adds the checkbit for each subset to the sub-signal to generate at least two copies of an augmented sub-signal;

(c) redundant portions of a distributed switch fabric, wherein the redundant portions route in parallel the copies of each augmented sub-signal to generate at least two routed sub-signals for the sub-signal, wherein the distributed switch fabric has multiple switch components adapted to route different portions of each of a plurality of incoming signals in parallel;

(d) a fault detector for each set of routed sub-signals, wherein the fault detector:

(1) performs a checksum analysis on at least one of the routed sub-signals; and

(2) selects one of the routed sub-signals in accordance with the checksum analysis; and

(e) a combiner for each outgoing signal, wherein the combiner combines data from the selected routed sub-signals corresponding to the plurality of sub-signals to generate the outgoing signal.

13. (currently amended) The invention of claim 12, wherein ~~step (a) comprises the step of terminating~~ the switch is adapted to terminate overhead data in the received incoming signal, wherein the checkbits replace at least some of the terminated overhead data during routing through the distributed switch fabric.

14. (currently amended) The invention of claim 13, wherein the size of each subset of data in each sub-signal is selected such that the addition of the checkbits does not increase the size of the ~~data~~ augmented sub-signal routed through the distributed switch fabric relative to the size of the ~~data in the incoming signal~~ corresponding sub-signal.

15. (original) The invention of claim 14, wherein the incoming signal is in a SONET format and further comprising buffers configured to buffer a sufficient amount of data to ensure errorless protection switching upon detection of a fault by the fault detector.

16. (currently amended) The invention of claim 15, wherein the selection of routed sub-signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals for each other sub-signal for the incoming signal.

17. (currently amended) The invention of claim 15, wherein the selection of routed sub-signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all other sub-signals for the incoming signal.

18. (original) The invention of claim 12, wherein the incoming signal is in a SONET format.

19. (currently amended) The invention of claim 12, wherein the selection of routed sub-signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals for each other sub-signal for the incoming signal.

20. (currently amended) The invention of claim 12, wherein the selection of routed sub-signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all other sub-signals for the incoming signal.

21. (original) The invention of claim 12, further comprising buffers configured to buffer a sufficient amount of data to ensure errorless protection switching upon detection of a fault by the fault detector.

22. (new) The invention of claim 1, wherein each augmented sub-signal is the same size as the corresponding sub-signal.

23. (new) The invention of claim 12, wherein each augmented sub-signal is the same size as the corresponding sub-signal.